

Message

From: Manojit Basu [mbasu@croplifeamerica.org]
Sent: 6/2/2021 6:09:30 PM
To: Messina, Edward [Messina.Edward@epa.gov]
Subject: RE: UV light to treat vinyards for mildew
Attachments: ATT00001.txt

Thank you for sharing. This is exciting!

The Ag industry is certainly going through the disruption other industries have already been through.

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From: Messina, Edward <Messina.Edward@epa.gov>
Sent: Wednesday, June 2, 2021 2:03 PM
To: Blankinship, Amy <Blankinship.Amy@epa.gov>; Manojit Basu <mbasu@croplifeamerica.org>
Subject: FW: UV light to treat vinyards for mildew

fyi

Ed Messina, Esq.
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Washington, D.C.
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From: Weiler, Gregory <weiler.gregory@epa.gov>
Sent: Wednesday, June 2, 2021 8:22 AM
To: Messina, Edward <Messina.Edward@epa.gov>; Rush, Randall <Rush.Randall@epa.gov>; Ayres, Sara <Ayres.Sara@epa.gov>; Angle, Stephen <Angle.Stephen@epa.gov>; Broadnax, Sheila <Broadnax.Sheila@epa.gov>; Dunbar, Kristin <Dunbar.Kristin@epa.gov>; Nystrom, Eric <nystrom.eric@epa.gov>; Garcia, Diego <Garcia.Diego01@epa.gov>; Luschek, Robert <Luschek.Robert@epa.gov>; Moline, Sierra <Moline.Sierra@epa.gov>; Khan, Sidrah <khan.sidrah@epa.gov>; RonDsmith1349@outlook.com
Subject: UV light to treat vinyards for mildew

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FEATURED

Northwest wine industry eyes UV light to treat powdery mildew

- By GEORGE PLAVEN Capital Press

- May 28, 2021

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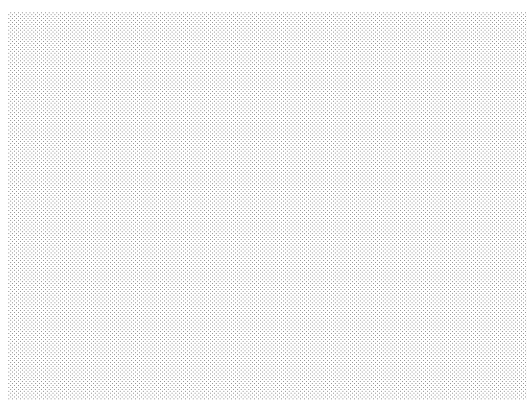
Willamette Valley Vineyards in Turner, Ore., is the first commercial operation to adopt the Thorvald, an autonomous, self-driving robot equipped with a special band of UV lights to suppress powdery mildew.

- Willamette Valley Vineyards



A closeup of the Thorvald as it passes over rows of grapevines at Willamette Valley Vineyards.

- Willamette Valley Vineyards



David Markel, research and development manager at Willamette Valley Vineyards, prepares to operate Thorvald at the winery south of Salem.

- Willamette Valley Vineyards

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TURNER, Ore. — The robot shines an eerie green in the dark of night as it maneuvers over rows of grapevines at Willamette Valley Vineyards.

Developed by Norwegian-based Saga Robotics, Thorvald — as the system is named — is an autonomous, self-driving vehicle that looks a bit like a small shed on wheels. Inside, it is equipped with a special band of ultraviolet lights designed to suppress powdery mildew and other plant diseases.

As research continues to demonstrate the efficacy of UV light as a management tool for farmers, Willamette Valley Vineyards has become the first commercial operation to adopt Thorvald in place of traditional chemical fungicides to control powdery mildew in winegrapes.

"We see this as a remarkable opportunity for our industry to grow high quality winegrapes and do it in a very natural, sustainable way," said Jim Bernau, the winery's founder and CEO.

While Bernau and Willamette Valley Vineyards began experimenting with UV light last year, scientists from around the world have been conducting field trials on and off for decades, spanning a variety of crops including strawberries, apples, cucumbers and hops.

Today, a research team led by David Gadoury, plant pathologist at Cornell University, is gathering data and refining treatments using UV light, with results showing promise.

Gadoury was the featured speaker at a webinar May 27 hosted by Washington State University and the Washington State Wine Commission, providing vintners with the latest information about UV light and its potential as an alternative for curbing plant diseases.

Powdery mildew, in particular, is one of the most widespread problems in the wine industry. If not suppressed, the disease can reduce crop yield by as much as 95% and degrade wine quality.

The first field trials using UV light took place in 1991, though they were less than successful, Gadoury said. Though it effectively reduced powdery mildew in grapes, it also defoliated vines and caused the fruit to shrivel, resembling miniature russet potatoes.

Then came a key discovery 10 years ago. A doctoral student in Norway found that UV light was much more effective killing powdery mildew at night, when the pathogens' natural systems for repairing their DNA have shut down to conserve energy.

Not only are the pathogens more susceptible at night, but Gadoury said they were able to use 10% less UV-C to achieve the same levels of disease reduction, at levels that won't cause damage to the plants or fruit.

"Pathogens such as powdery mildew, and many other organisms, just really don't like UV light at night," Gadoury said. "That means we can kill them with a fraction of the dose that's required during daylight."

New trials started in 2017 at a commercial strawberry farm in Florida. This time, they proved a rousing success, performing significantly better than applications of chemical fungicides.

Additional trials are now underway in places like California and Nova Scotia, Canada, as well as overseas in Europe.

"I think we're beyond the point where we have to worry about whether or not this technology is going to provide sustainable control of strawberry powdery mildew," Gadoury said. "It actually works quite well."

The technology is also being put to the test in Northwest vineyards.

Michelle Moyer, statewide viticulture extension specialist for WSU, leads a nationwide program looking into fungicide resistance. Last year, she began conducting experiments with UV light, studying differences in timing and frequency of treatments.

Though last year saw little disease pressure overall, Moyer said using UV light in seven-day intervals showed "pretty acceptable" levels of disease control.

"We saw that, and liked that type of data," Moyer said.

Gadoury said UV light is also showing promise at treating other diseases like sour rot, and killing the eggs of different mite species.

With success across multiple crops and pathogens, UV light has also started attracting the attention of equipment manufacturers like Saga Robotics, Gadoury said. Saga Robotics introduced the Thorvald system last year, and has partnered with Willamette Valley Vineyards to roll out its first commercial unit.

The winery's interest in UV light actually started as a way to kill the coronavirus at the height of the pandemic last year in its tasting room, south of Salem.

"We learned it can be used to kill viruses and other things like powdery mildew — naturally, without the use of chemicals," Bernau said.

In addition to WSU, Gadoury has worked with researchers at the USDA Agricultural Research Service station in Corvallis, Ore., on field testing.

Gadoury cautioned that UV light is not a magic bullet that will eliminate all pesticide use, but at least in the fight against powdery mildew, it appears to equal or exceed some of the best fungicidal applications on the market.

"While these machines have a certain 'cool factor' — they're fun to watch — it's the research on epidemiology, pathogen ecology and photobiology research that really makes them work," he said. "Otherwise, it's just a toy."

From: Plewe, Bethany <Plewe.Bethany@epa.gov>

Sent: Tuesday, June 1, 2021 6:31 PM

To: Weiler, Gregory <weiler.gregory@epa.gov>; Glynn, Tara <Glynn.Tara@epa.gov>; Livingston, Pat <Livingston.Patricia@epa.gov>; Baumgartner, Donald <baumgartner.donald@epa.gov>; Szylvian, Andrea M.

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Cc: Angle, Stephen <Angle.Stephen@epa.gov>; Broadnax, Sheila <Broadnax.Sheila@epa.gov>; Dunbar, Kristin <Dunbar.Kristin@epa.gov>; Nystrom, Eric <nystrom.eric@epa.gov>; Garcia, Diego <Garcia.Diego01@epa.gov>; Lammers, Jeffrey <Lammers.Jeffrey@epa.gov>; Luschek, Robert <Luschek.Robert@epa.gov>; Moline, Sierra <Moline.Sierra@epa.gov>; Khan, Sidrah <khan.sidrah@epa.gov>; Rush, Randall <Rush.Randall@epa.gov>; Ayres, Sara <Ayres.Sara@epa.gov>; Terada, Derrick <Terada.Derrick@epa.gov>

Subject: FW: UV light UAVs, Unmanned tractors, and Guidance from Washington

FYI – UV light unmanned vehicles in Washington, below.

Washington has been dealing with various unmanned vehicles, such as unmanned tractors like those from Monarch: Monarch Tractor Electric Tractor. These tractors are often used to pull air blast sprayers. Washington State Dept of Ag recently issued autonomous driverless guidance as compliance assistance to users (doesn't apply to UAVs). 894-PMD-Autonomous-Driverless-GUIDANCE.pdf

GUSS is another unmanned vehicle being used in California orchards. They have a wider wheelbase than those used in Washington. <https://gussag.com/>

Bethany Plewe

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From: Schultz, Tim (AGR) <TSchultz@agr.wa.gov>

Sent: Tuesday, June 1, 2021 2:10 PM

To: Schulze, Chad <Schulze.Chad@epa.gov>; Terada, Derrick <Terada.Derrick@epa.gov>; Liu, Linda <Liu.Linda@epa.gov>; Plewe, Bethany <Plewe.Bethany@epa.gov>

Subject: Northwest wine industry eyes UV light to treat powdery mildew

Dear Region 10,

Interesting article on powdery mildew in vineyards being controlled by ultraviolet light autonomous vehicles. Current practice in some areas may be spraying a fungicide every 7 to 10 days for powdery mildew.

https://www.capitalpress.com/ag_sectors/orchards_nuts_vines/northwest-wine-industry-eyes-uv-light-to-treat-powdery-mildew/article_3d767fae-bfd0-11eb-b903-f7b33abb3b5e.html?utm_medium=social&utm_source=email&utm_campaign=user-share

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